Claims

1. A method for evaluating the luster of a skin, comprising:

(A1) imaging the skin of a test subject and obtaining digital image data;

(A2) extracting the data of mirror-reflected light components of respective pixels from the digital image data;

(A3) obtaining the average value of the brightness of the respective pixels from the data of the mirror-reflected light components and defining it as physical glossiness;

(A4) applying multiresolution analysis to the data of the mirror-reflected light components to separate the data into respective data of a plurality of different frequency components, selecting data of a plurality of middle-frequency components representing the texture of a skin from the data, synthesizing the selected data and defining the synthesized data as reconstructed image data, squaring the data of the respective pixel components of the reconstructed image data, obtaining the average value and defining the result as an apparent roughness of a skin surface; and

(A5) representing the luster state of the skin by the physical glossiness and the apparent roughness of the skin surface.

2. The method for evaluating the luster of a skin according to claim 1, wherein data of a mirror-reflected light component

is extracted from digital image data by using a dichromatic reflection model.

3. The method for evaluating the luster of a skin according to claim 1 or 2, wherein wavelet transformation and inverse wavelet transformation are repeated to separate a mirror-reflected light component into data of a plurality of different frequency components.

4. A method for evaluating the beauty of a skin, comprising:

(B1) imaging a target skin under a polarized lighting and obtaining digital image data;

(B2) imaging the same target skin under the polarized lighting by using a polarizing filter having a plane of polarization orthogonal to the plane of polarization of the polarized lighting and obtaining digital image data;

(B3) extracting data of a mirror-reflected light component from the digital image data obtained in steps (B1) and (B2);

(B4) performing multiresolution analysis on the data of the mirror-reflected light component extracted in step (B3), separating the data into data of a plurality of different frequency components, and selecting data of a plurality of high frequency components;

(B5) synthesizing the selected high frequency components

and defining the synthesized data as reconstructed image data;

(B6) determining the dispersion of respective pixel components in terms of the reconstructed image data; and

(B7) associating an average value from values of the dispersion obtained in step (B6) with the beauty of the skin.

5. The method for evaluating the beauty of a skin according to claim 4, wherein extraction of data of a mirror-reflected light component in step (B3) is performed by using a dichromatic reflection model and a Moor-Penrose generalized inverse matrix.

6. The method for evaluating the beauty of a skin according to claim 4 or 5, wherein the multiresolution analysis in step (B4) is performed by repeating wavelet transformation and inverse wavelet transformation to separate a mirror-reflected light component into data of a plurality of different frequency components.

7. An image simulation method comprising:

(C1) imaging a target under a polarized lighting and obtaining digital image data;

(C2) imaging the same target under the polarized lighting by using a polarizing filter having a plane of polarization orthogonal to the plane of polarization of the polarized

lighting and obtaining digital image data;

(C3) extracting data of a mirror-reflected light component and data of an internal reflected light component from the digital image data obtained in steps (C1) and (C2);

(C4) performing multiresolution analysis on the data of the mirror-reflected light component extracted in step (C3) and separating the data into data of a plurality of different frequency components;

(C5) changing the data of a desired frequency component among the respective data of the separated plurality of different frequency components;

(C6) synthesizing the data of the frequency component that is changed with the data of the frequency components that are unchanged and defining the synthesized data as reconstructed image data; and

(C7) synthesizing the reconstructed image data obtained in step (C6) with the internally reflected light component data obtained in step (C3) and obtaining a simulation image of the target.

8. The image simulation method according to claim 7, wherein extraction of data of a mirror-reflected light component in step (C3) is performed by using a dichromatic reflection model and a Moor-Penrose generalized inverse matrix.

9. The image simulation method according to claim 7 or 8, wherein the multiresolution analysis in step (C4) is performed by repeating wavelet transformation and inverse wavelet transformation to separate a mirror-reflected light component into data of a plurality of different frequency components.

10. The image simulation method according to any one of claims 7 through 9, wherein the target is a human face.

11. A method for separating data of a mirror-reflected light component from a digital image, said method comprising:

(C1) imaging a target under a polarized lighting and obtaining digital image data;

(C2) imaging the same target under the polarized lighting by using a polarizing filter having a plane of polarization orthogonal to the plane of polarization of the polarized lighting and obtaining digital image data; and

(C3) extracting a mirror-reflected light component from the digital image data in steps (C1) and (C2).

12. The method for separating data of a mirror-reflected light component according to claim 11, wherein extraction of data of a mirror-reflected light component in step (C3) is performed by using a dichromatic reflection model and a Moor-Penrose generalized inverse matrix.